Examples are given of the techniques used to investigate the nature of bound residues, which methods include ^{13}C-labelling with use of nuclear magnetic resonance spectroscopy, ^{14}C-labelling followed by various chromatographic approaches and immunoassay methods. The nature of the covalent bonds formed between the organic matter fractions (humin, and humic and fulvic acids) and pesticides or their metabolites is considered for several examples, together with ways to stimulate pesticide breakdown and incorporation.

Finally, on the experimental side, several papers address the question of bioavailability of soil-bound residues. Techniques appraised include use of organisms such as earthworms or plants for uptake studies as well as indirect methods such as extraction followed by chemical analysis. It is of interest to note that the amounts of remobilised pesticides or their degradation products were very small in the examples given, and it is reassuring that no deleterious effects from non-extractable pesticide residues in soil are reported. A final chapter summarises the research requirements and some of the approaches and cautions in what can be a difficult area of work.

This book will appeal to the specialist researcher or pesticide regulator, and provides a good background to this topic.

Richard H Bromilow

Metabolic pathways of agrochemicals. Part one – herbicides and plant growth regulators

Ed-in-chief T Roberts
Royal Society of Chemistry, Cambridge, 1998
price UK £225.00
ISBN 0 854 004 494 9

Bringing together a large amount of previously disparate information, this volume will be welcomed by the herbicide community.

Comprehensively detailing pathways for the environmental and metabolic fate of most currently used products, each entry consists of a standardised, easy-to-read format describing physicochemical properties, chemical degradation and fate in soil, plants and animals. Each entry is accompanied by appropriate metabolic maps and references. A helpful feature is a concise overview of the properties of each chemical family. The book should establish itself as an authoritative reference work in a critically important field, in the years to come.

Some oversights are lack of referencing of mode-of-action statements, and inconsistencies in organism nomenclature – here, a glossary would have been helpful. It was unwise to group certain herbicides, including glyphosate, as 'organophosphorus compounds' and I hope these points will be rectified in future editions.

David J Cole

Insecticides of natural origin

Sukh Dev and Opender Koul
Harwood Academic Publishers, The Netherlands, 1997
365 pp, price UK£72.00
ISBN 3 7186 5913 1

As someone very interested in new approaches to the description of biologically active compounds from natural origins, I am always keen to read new texts that might offer innovative insights and identify commercially viable opportunities in this exciting area of research. This book has two sections: the first is an introduction, whilst the second is a list of 324 compounds that have been claimed at one time or another to be both natural and insecticidal. The introduction tells the reader that the book presents 'information in a proper scientific and economic perspective and highlights economically useful leads'. However, the only mention of azadirachtin in the entire book is in the first paragraph; it is not even included in the lists of natural compounds at the end nor is it mentioned in the index (which, incidentally, looks as if it has been added as an afterthought), a very strange situation for a compound that is becoming increasingly lauded for its natural insecticidal effects. If pyrethrum, nicotine and rotenone are excluded, azadirachtin has to be the most widely used natural compound for insect control. I also wonder how useful a table of the 61 plant families that possess species which produce insecticidal compounds is, without some ranking. Are the Poaceae as abundant a producer as the Meliaceae?

In part 2, the list of compounds is arranged by chemistry but separated into higher plants (222), micro-organisms (67), animals (4) and marine organisms (31). The entries contain the structure (where known), the source organism (unclassified beyond genus and species), the test species (with authorities – a significant plus for this) and references. A useful starting point but it could be so much more. The test species and the assays are different, entry to entry, and there is never a standard included so it is not possible to determine how effective the compounds actually are. This is probably not the fault of the authors but is a constant problem with data generated by those working on natural products (it reminds me of an old story of a man who had discovered a product with 10 000 times the wear and 25 000 times the grip but, as his comparitor had been a banana, he did not think he had a new car tyre product). However, it would have been helpful to have had some interpretation put on the data to allow the reader to get a feel for the